

Catch that train!

- You want to visit your friend in Seattle over Winter-quarter break. To save money, you decide to travel there by train. But you are late finishing your physics final, so you are late in arriving at the train station. You run as fast as you can, but just as you reach one end of the platform your train departs, 30 meters ahead of you down the platform. You can run at a maximum speed of 8 m/s and the train is accelerating at 1 m/s^2 . You can run along the platform for 50 meters before you reach a barrier. Will you catch your train?



Lesson #10

Topic: Acceleration

Objectives: (After this class I will be able to)

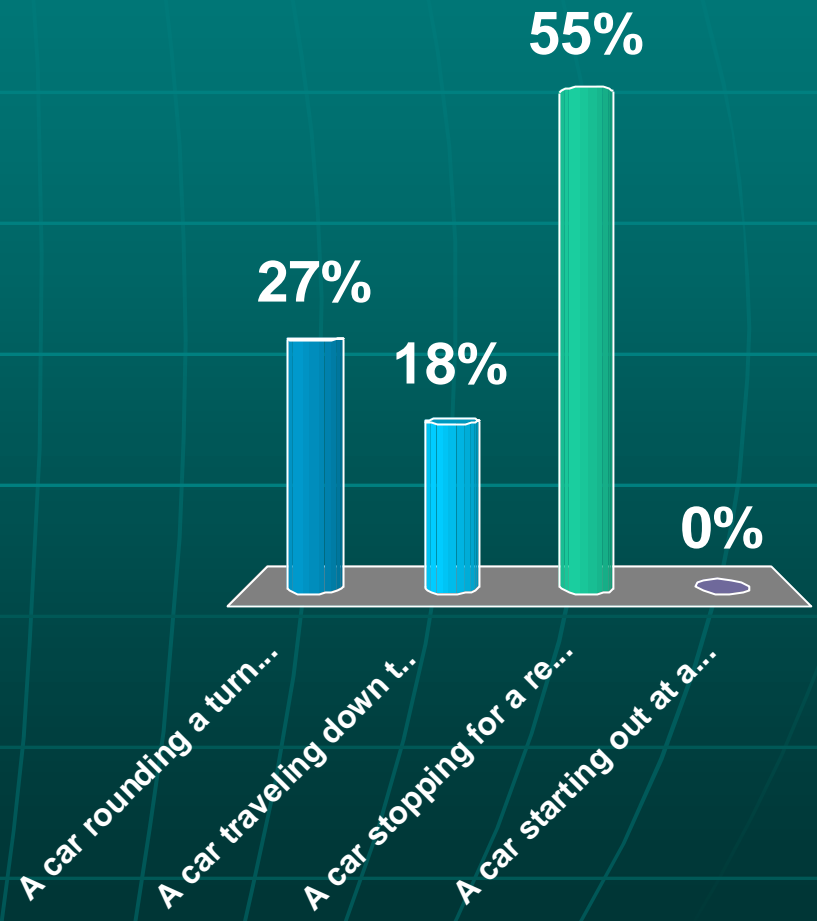
1. Find the acceleration of car on a ramp.
2. Define "Kinetic"

Project: Run a car down a ramp and describe the acceleration.
(How does the velocity change over time?)
(How does the distance covered change over time?)

Assignment: "Kinematics" due tomorrow!

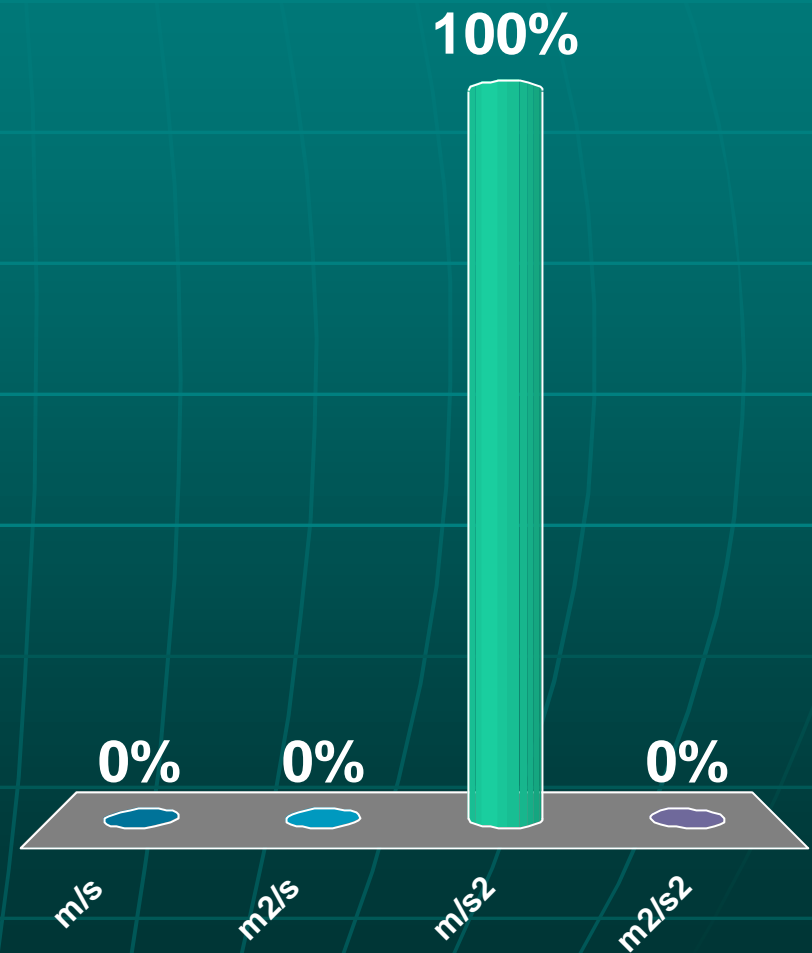
Which of the following is **not** an example of acceleration?

1. A car rounding a turn at constant speed.
2. A car traveling down the interstate at 70mph
3. A car stopping for a red light.
4. A car starting out at a green light.



What is the unit of acceleration?

1. m/s
2. m^2/s
3. m/s^2
4. m^2/s^2



Kinematics Equations

A toy car has an initial velocity of v_i m/s and is accelerating at a rate of a m/s² for t seconds. How far did the car travel during this time?

Givens

$$d = ?$$

$$v_i$$

$$a$$

$$t$$

Original Equations

$$\bar{v} = \frac{d}{t}$$

$$\bar{v} = \frac{v_f + v_i}{2}$$

$$a = \frac{v_f - v_i}{t}$$

Kinematics Equations

A toy car has an initial velocity of v_i m/s and is accelerating at a rate of a m/s² it travels a distance of d meters. What is the car's final velocity at this distance?

Givens

$$v_f = ?$$

$$v_i$$

$$a$$

$$d$$

Original Equations

$$\bar{v} = \frac{d}{t}$$

$$\bar{v} = \frac{v_f + v_i}{2}$$

$$a = \frac{v_f - v_i}{t}$$

Practice Problems

Page 69

Problems 27, 28, 30, 32, 33

Determine if you will catch the train or not.

Bike Race quiz

Project

- Toss objects into the air and drop objects to the ground.
- Make observations and describe the acceleration of the objects.
- Compare the acceleration of massive objects to light objects.

Lesson #11

Topic: Lab #2 Graphing Gravity

Objectives: (After this class I will be able to)

1. Find acceleration of an object given a velocity vs. time graph
2. Describe factors that affect the acceleration of a falling object.

Task: Collect data with a photogate to find the acceleration of a falling object.

Question: Does mass, height, or initial velocities affect the acceleration of a falling object?

Assignment: Lab Report due by the end of class tomorrow.